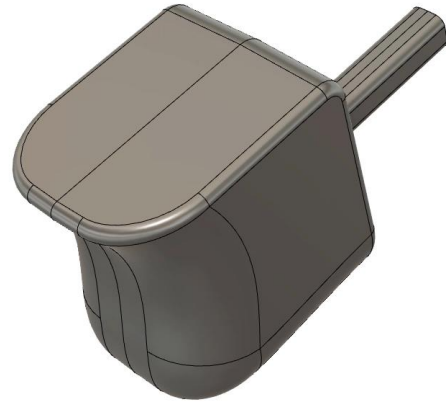


Create a 3D model saw trigger

In this module, you'll create a 3D model from a sketch and analyze its draft to make sure it can be manufactured.

Learning objectives:

- Use Extrude.
- Use Fillet.
- Create a drafted part.



The completed exercise

1. Continue with the *Trigger Model.f3d* file from the previous module.

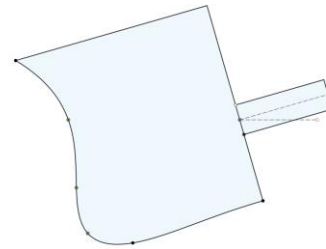


Figure 1. Continue with the file from the previous module

2. Activate the Trigger component by clicking the radio button next to it.

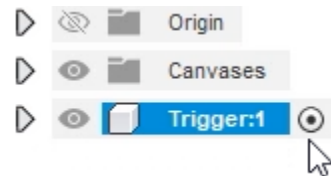


Figure 2. Activate the Trigger component

3. Double-click the timeline's Sketch feature to edit it.

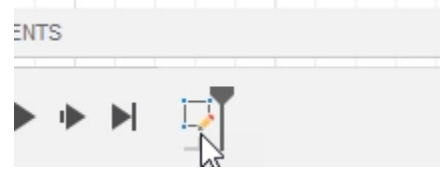


Figure 3. Edit the sketch

4. Increase the length of the rectangle to **20 mm**, then finish the sketch by clicking Finish Sketch > Finish Sketch.

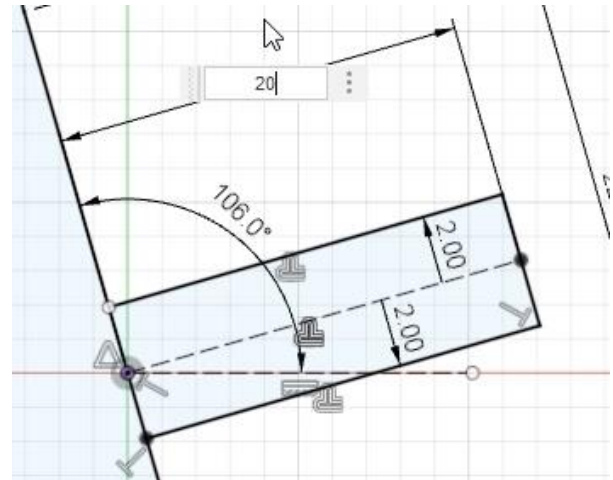


Figure 4. Change a dimension

5. Press E to open the Extrude tool and select the region shown in the image on right.

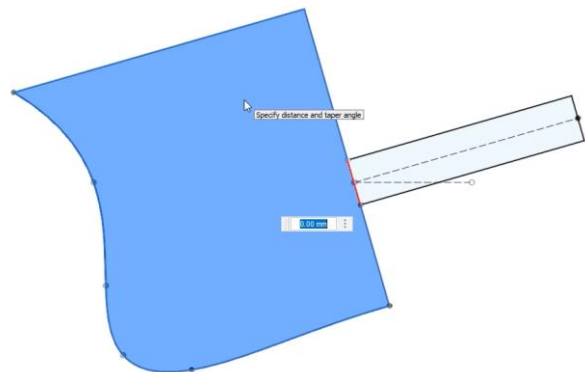


Figure 5. Select a region to extrude

6. Choose the Symmetric option from the dialog's Direction menu, then choose the Whole Length option from the Measurement section. Enter **20 mm** into the Distance box, then enter **-1** into the Taper Angle box. The taper angle will ensure that this part can be released from the mold after it is injection molded. OK the dialog.

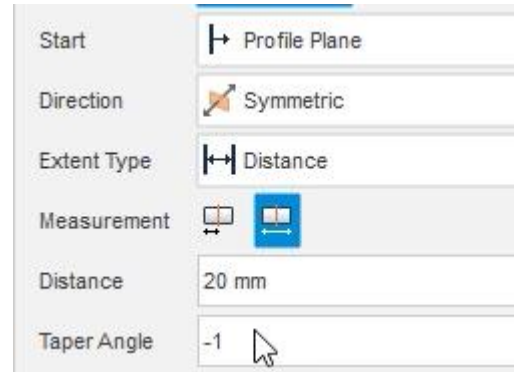


Figure 6. Configure the extrude

7. Use the Browser to turn on the visibility for Sketch1.

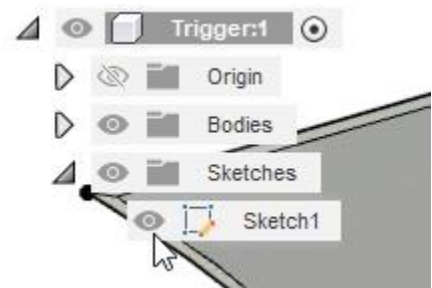


Figure 7. Show Sketch1

8. Edit the timeline's Sketch feature by double-clicking it. Extend the rectangle inside the trigger body by drawing a 4 mm square. Add dimensions and constraints to make sure the geometry is fully defined. Finish the sketch.

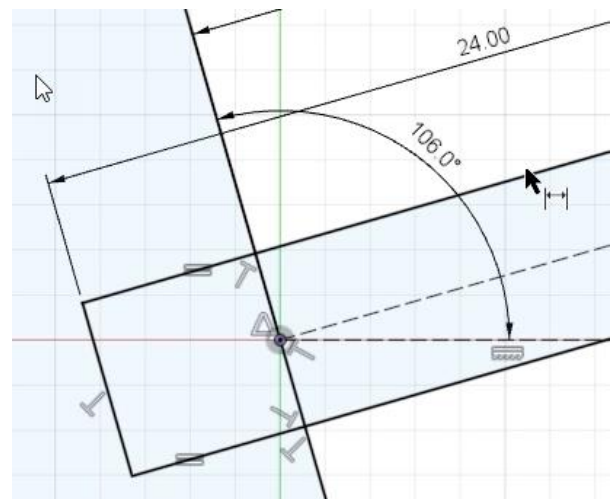


Figure 8. Draw a 4 mm square

9. Open the Extrude tool and select the two regions shown in the image on the right. You'll have to hold Ctrl (Windows) or Command (MacOS) to select multiple regions.

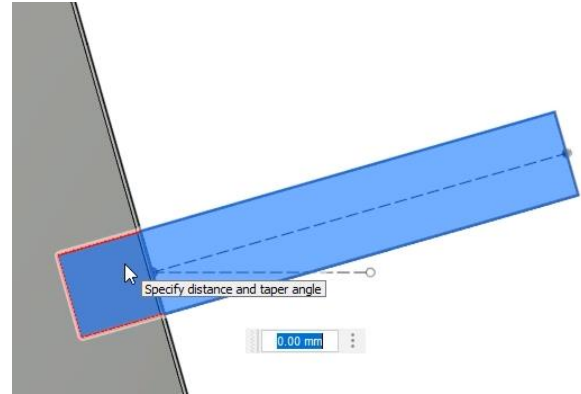


Figure 9. Select the regions to extrude

10. Use the image on the right as a guide to configure the new extrude. Be sure to choose the Joint option from the dialog's Operation menu so that the new extrude is added to the existing extrude instead of removing material from the existing extrude. OK the dialog.

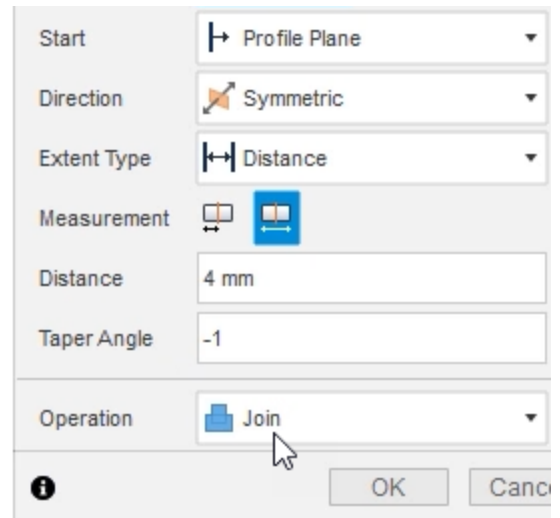


Figure 10. Create the extrude

11. Use the Browser to hide Sketch1.

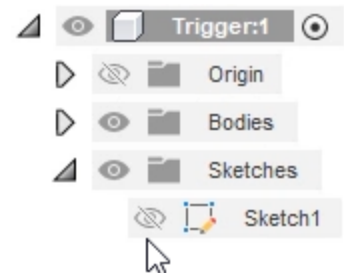


Figure 11. Hide Sketch1

12. Click Modify> Fillet and select the two edges created by the spline.

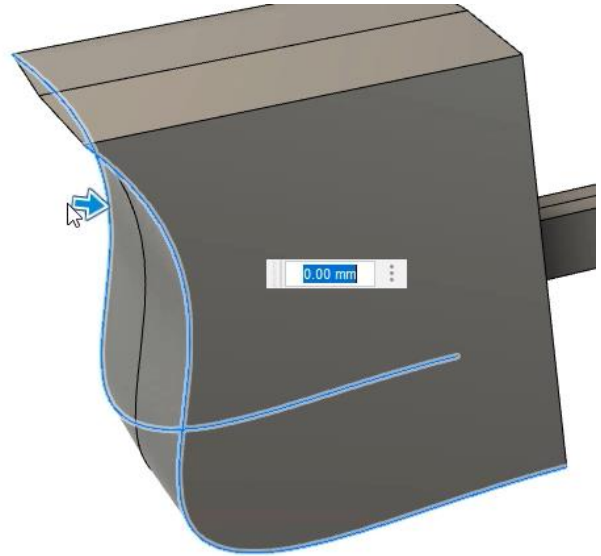


Figure 12. Select the edges to fillet

13. Drag the on-screen manipulator to add a 7 mm fillet to the selected edges, then OK the dialog.

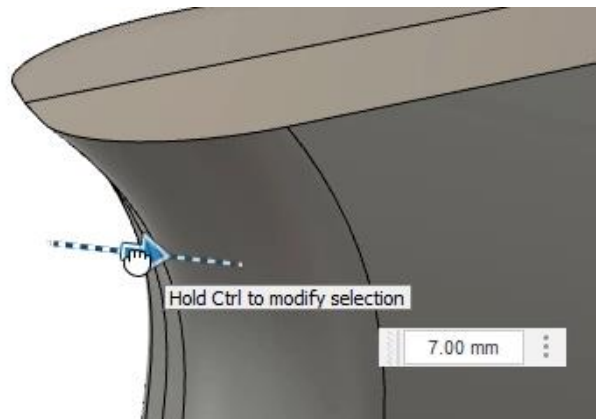


Figure 13. Fillet the edges

- 14.** Press F to open the Fillet tool and add a 2.5 mm fillet to the two edges shown in the image on the right. OK the dialog.

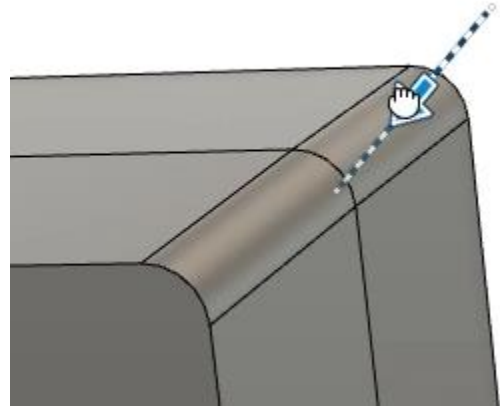


Figure 14. Fillet the trigger's edges

- 15.** Open the Fillet tool and add a 1 mm fillet to the four edges shown in the image on right. OK the dialog.

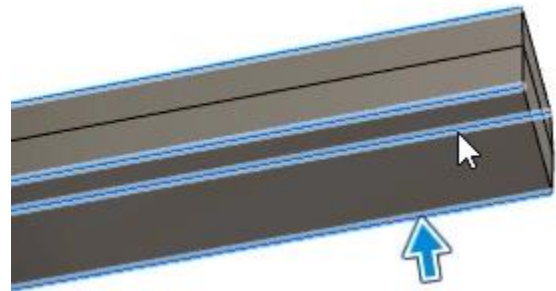


Figure 15. Fillet the four edges

16. Open the Fillet tool and add a 1 mm fillet to the two edges shown in the image on right. OK the dialog.



Figure 16. Fillet two more edges

17. Click Inspect> Draft Analysis.

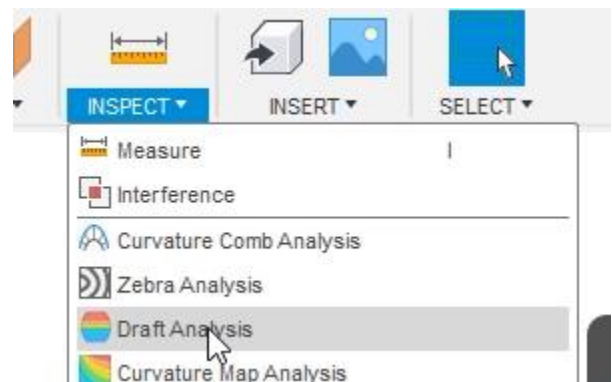


Figure 17. Open the Draft Analysis tool

18. For the Draft Analysis dialog's Body selection, choose the Trigger component. For the Direction selection, choose the YZ plane shown in the image on the right.

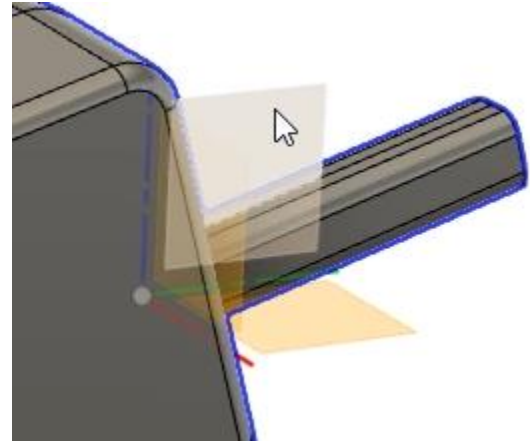


Figure 18. Configure the Draft Analysis

19. Reduce the Draft Angle range from **-0.5** to **0.5 deg**, then deactivate the Tolerance Zone option.

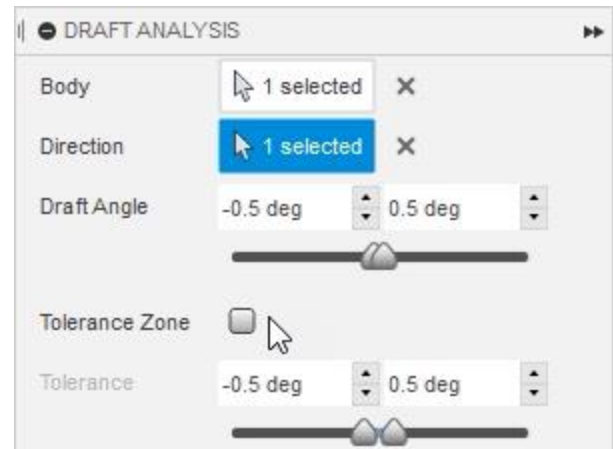


Figure 19. Configure the Draft Analysis

20. Notice that all the features are either green or blue, which indicates that the part is drafted appropriately.

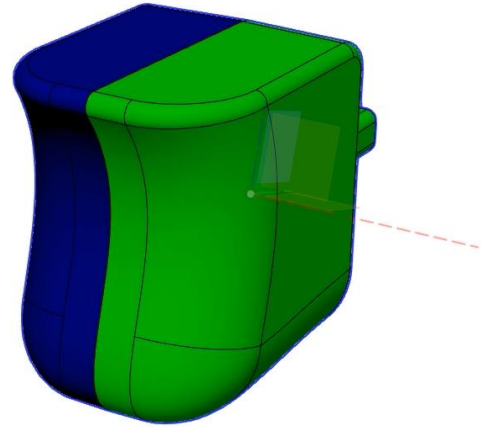


Figure 20. Inspect the Draft Analysis

21. Activate the Browser's top level, save the design, then continue to the next module.

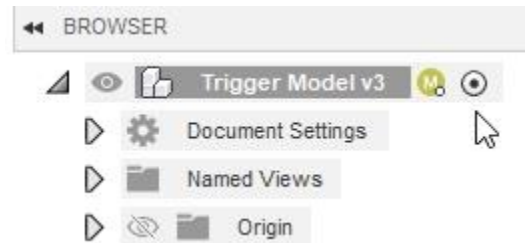


Figure 21. Save the file